

ROAD TRAFFIC NOISE, AIR POLLUTION AND HYPERTENSION IN OSLO, NORWAY

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Background and Aims: Epidemiological studies have reported associations between aircraft noise and hypertension, whereas the relationship between road traffic noise and hypertension is more uncertain. Road traffic is the main source of noise and air pollution, and air pollution has also been linked to cardiovascular outcomes. However, the knowledge about the relative importance of noise and air pollution in developing cardiovascular diseases is limited. We investigated the relationship between residential road traffic noise, air pollution and hypertension.

Methods: We identified hypertension as measured systolic blood pressure above 140 mmHg, measured diastolic blood pressure above 90 mmHg or self-reported use of antihypertensive medication in the population-based "Oslo Health Study" (N=8,921). The participants were assigned residential road traffic noise at most exposed façade and NO₂ levels. L_{den} (A-weighted day-evening-night noise level) and L_{night} were calculated on 5 x 5 m² grid, using The Nordic Prediction Method. NO₂ was calculated by the EPISODE dispersion model mainly on 1 km² grid

Results: The correlation between road traffic noise and NO₂ was 0.4. Preliminary results showed an odds ratio (OR) of 1.03 for hypertension [95% confidence interval (CI): 0.97-1.09] per interquartile range (IQR) higher level of traffic noise (L_{night}) adjusted for age, gender, body mass index and education. We found no associations between NO₂ and hypertension. Adjusting for NO₂ did not change the OR of traffic noise. In men we found an OR of 1.06 [95% CI: 0.97-1.15] per IQR increase of traffic noise (L_{night}), and OR=0.99 [95% CI: 0.91-1.08] in women.

Conclusions: Residential road traffic noise may not be related to hypertension among participants in "Oslo Health Study". The association was somewhat stronger in men than women, but did not reach statistical significance. These associations are probably not affected by traffic-related air pollution in Oslo.